

State of Hawaii  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Engineering Division  
Honolulu, Hawaii 96813

August 22, 2008

Board of Land and Natural Resources  
State of Hawaii  
Honolulu, Hawaii

**APPLICATION FOR A DLNR DAM SAFETY  
CONSTRUCTION/ALTERATION PERMIT  
PERMIT NO. 30 - WAIKOLOA RESERVOIR NO. 2 (HI00122)  
RESERVOIR REPAIR, KAMUELA, HAWAII**

The Engineering Division hereby submits an application for your authorization and approval for issuance of a Dam Safety Construction/Alteration Permit for the reservoir repair at the Waikoloa Reservoir No. 2, to the County of Hawaii, Department of Water Supply, Pursuant to Chapter 179D Hawaii Revised Statutes and Chapter 190 Hawaii Administrative Rules.

APPLICANT:

Mr. Milton D. Pavao  
County of Hawaii  
Department of Water Supply  
345 Kekuanaoa Street, Suite 20  
Hilo, HI 96720

LANDOWNER:

State of Hawaii  
Department of Hawaiian Home Lands

SUMMARY OF REQUEST:

Application for a Dam Safety Construction/Alteration Permit for repair of 2006 Kiholo Bay earthquake damage to external and internal reservoir embankments at the Waikoloa Reservoir No. 2 (HI00122), Kamuela, Hawaii, TMK: (3) 6-5-001:047 and por. 011. See Exhibit 1.

LOCATION: Kamuela, Hawaii. See Exhibit 2.

BACKGROUND:

A preliminary application for the repair of the Waikoloa Reservoir No. 2 was filed on January 11, 2008 by the dam owner, the County of Hawaii, Department of Water Supply (HDWS) with an 80% design submittal to start the permit design review process and was followed up with a signed application submitted on June 30, 2008. The Waikoloa Reservoir No. 2 was damaged by the October 15, 2006 Kiholo Bay earthquake. Through a contract with the Department of Land and Natural Resources (Department), the U.S. Bureau of Reclamation conducted dam safety

inspections on the Island of Hawaii in the days following the earthquake. The inspection of Waikoloa Reservoirs No. 1 and 2 revealed excessive seepage and sand boils on the downstream slope of the embankment. The water levels in both reservoirs were immediately lowered to alleviate the water pressure on the embankments. Waikoloa Reservoir No. 2 was eventually emptied to assure the public safety downstream of the dam.

The Waikoloa reservoir system is a major source of water supply to the Kamuela area. Therefore there is an urgency to place this reservoir back into service. HDWS initially submitted an 80% design submittal so that the Department could start the project design review. Kleinfelder West, Inc., engineering consultant for HDWS, has been working with Gannett Fleming, Inc., consultant for the Department, during the design process and has satisfactorily addressed the concerns by Gannett Fleming, Inc. regarding the repair, remediation and seismic design.

#### DESCRIPTION:

The Waikoloa Reservoir No. 2 is a dam and reservoir used to provide drinking water to the Waimea Water Treatment Plant in conjunction with three other reservoirs. The reservoirs receive water from the ditch system upstream. Waikoloa Reservoirs No. 1 and 2 hold 50 million gallons of water each, providing a majority of the capacity of the system. The Waikoloa Reservoir No. 1 was also damaged by the earthquake and is currently being utilized at less than 50% capacity, with plans for repair to be completed after the Waikoloa Reservoir No. 2 repairs are complete.

Earthquake damage to the Waikoloa Reservoir No. 2 includes cracking of the concrete panels that line the inside of the entire reservoir and seepage and soft spots on the downstream embankment (between Waikoloa Reservoir No. 1 and 2).

The top rim and curb of the reservoir sustained cracks with chunks breaking off between joints and re-bar exposure in some areas. The damage to the side panels show separation between individual panels as well as cracking within the panels. Accordingly, damage to the floor includes joint separation between panels, cracking at the joints and cracks internally to some of the panels themselves. Behind all these panels it is also projected that there are numerous random void spaces.

To address the various cracks internal to the reservoir, HDWS plans to line the inside of the reservoir with a synthetic geomembrane liner. There will be some patching and filling of some of the voids behind the panels as can be completed. The liner will provide the first barrier of protection from seepage through the base of the reservoir.

The project will also include work to remediate the outside downstream embankments by installing an internal filter and drainage system in various locations around the outside of the reservoir. The filter and drainage system will allow for a controlled seepage through the embankment preventing the loss of embankment material. It will also allow for observation and measurement of any potential seepage which will provide information on the condition of the embankment walls and assist in tracking changes in the condition of the dam. See Exhibit 3.

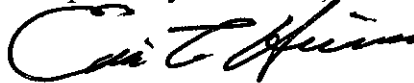
REMARKS:

HDWS has maintained the dam in an empty state since October 2006. HDWS and its consultant, Kleinfelder West, Inc. has completed a basis of design, plan and request for the approval of a dam safety construction/alteration permit. The Department, along with their consultant, Gannett Fleming, Inc. has reviewed the plans and concluded that it is sufficient for its intended purposes and staff recommends approval of the proposed repair plans, see Exhibit 4. The owner has been informed of the proposed terms and provided an email acknowledgement, see Exhibit 5 and 6.

RECOMMENDATION: That the Board:

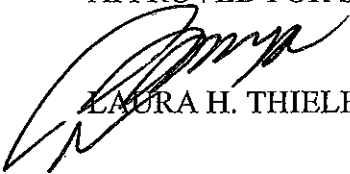
1. Authorize the approval and issuance of the Dam Safety Construction/Alteration Permit for this project; and
2. Direct the Chairperson to issue a dam safety permit for the repair of the Waikoloa Reservoir No. 2 (DLNR Dam Safety Construction/Alteration Permit No. 30) subject to such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.

Respectfully submitted,



ERIC T. HIRANO  
Chief Engineer

APPROVED FOR SUBMITTAL:



LAURA H. THIELEN, Chairperson

Exhibit(s):	1	Owner Permit Application
	2	Location Plan
	3	Site Plan, profile and detail drawings
	4	DLNR Consultant Review (to be provided)
	5	DLNR letter to Owner
	6	Owner acknowledgement

DLNR Dam Safety Sheet 1  
06 JUL 07 AM 11:52 ENGINEERING

State of Hawaii  
BOARD OF LAND AND NATURAL RESOURCES  
Department of Land and Natural Resources  
Engineering Division

APPLICATION FOR APPROVAL OF PLANS AND SPECIFICATIONS FOR CONSTRUCTION,  
ENLARGEMENT, REPAIR, ALTERATION, OR REMOVAL OF A DAM

Applicant County of Hawaii - Department of Water Supply

Mailing Address 345 Kekuanaoa Street, Suite 20, Hilo, HI 96720

Telephones: Business 961-8790 Home N/A

hereby applies to the Division of Water and Land Development for the approval of the attached plans and specification for the repair (construction, etc.) in accordance with, and subject to, the provisions, conditions, and limitations of Chapter 13-190, Hawaii Administrative Rules.  
reservoir located Latitude 20.0395 Degree North, Longitude  
155.675° West in Kamuela, Hawaii

Accompanying this application are:

(please check)

- |  |                        |                    |
|--|------------------------|--------------------|
| 1. Filing fee (\$25.00) (Waived for government agencies) |                        | N/A                |
| 2. Three (3) copies of the Detailed Cost Estimate        |                        | X                  |
| 3. Three (3) copies of the Final Design Report           |                        | X                  |
| 4. Three (3) copies of the Plans                         |                        | X                  |
| 5. Three (3) copies of the Specifications                | } 80% Design Submittal | X                  |
| 6. Proposed Construction Schedule                        |                        | Currently Included |
| 7. Supporting documents:                                 |                        | X                  |

"Remediation Analyses Summary Technical Memorandum"

"Planning Level Design Summary Technical Memorandum"

Both previously submitted 09/10/07. Final construction documents to be submitted later.

NAME OF STRUCTURE Waikoloa Reservoir No. 2

DAM OR RESERVOIR LOCATION:

Island Hawaii Tax Map Key (3) 6-5-001:047 and por. 011

Attach USGS topographic map (scale 1" = 2000') and property tax map (showing location access to site, proposed work)

State Land Use District:    Agriculture    Urban    Rural    Conservation

BRIEF DESCRIPTION OF WORK TO BE PERFORMED

Repair of 2006 Kiholo Bay Earthquake damages to external and internal reservoir embankments. External repairs include installing an internal filter and drainage system. Internal repairs include installing a synthetic geomembrane liner.

Exhibit 1

**TECHNICAL INFORMATION:**

DLNR-Dam Safety-Sheet 2

1. Drainage Area N/A sq. miles or \_\_\_\_\_ acres
2. Classification of Dam High Hazard Structure
3. Type of Structure Reservoir/Dam, Earth Fill
4. Elevation-Area-Capacity Data:


	Elevation	Surface Area (acres)	Total Storage Volume (acre-feet)
Natural Streambed	<u>N/A</u>		
Primary Spillway	<u>3355 ft.</u>		
Secondary Spillway	<u>N/A</u>		
Top of Dam	<u>3359 ft.</u>		
Design Water Level	<u>3353.7 ft.</u>		<u>153.45</u>
Invert of Drain	<u>3324 ft.</u>		
5. Spillway Details (Type, Dimensions, Material)  
Primary: Uncontrolled Ogee Weir Crest, 5 ft. wide, concrete  
Secondary: N/A
6. Purpose of Structure Municipal Water Supply  
(water supply, irrigation, recreation, real estate development, etc.)
7. Attach rainfall and stream flow records, and flood-flow records and estimates (as accurately as may be readily obtained) inflow design flood hydrograph attached

**ADDITIONAL INFORMATION**

1. Owner (if different from applicant) N/A  
Mailing Address N/A
2. Registered Hawaii Professional Engineer who prepared the plan Keith Ferguson,  
Kleinfelder West, Inc.  
Mailing Address 611 Corporate Circle, Suite C, Golden, CO 80401  
Telephone (303) 237-6601 Registration No. 12307-C
3. Additional Technical Consultants Jie Yu, John Ballegeer of Kleinfelder;  
Dr. Peter Nicholson, University of Hawaii; William Way, Independent  
Consultant
4. Registered Professional Engineer to be responsible for inspection during construction Keith Ferguson, Kleinfelder
5. Contractor To Be Determined  
Mailing Address \_\_\_\_\_
6. Additional permits required from other governmental agencies Grading Permit  
from County
7. Effect of proposed structure on natural environment None (EA exempt)

8. List all other parties that have ownership or other interest on the parcels where the dam and reservoir are located and identify their interest in the property. The Owners herein listed below concur with the work proposed within this application by the applicant and by his signing hereto, the owner of the land extends to the Board of Land and Natural Resources, and its designated representatives, a right-of-entry onto the project site to conduct any investigations or inspections required in compliance with the provisions of Chapter 13-190, Hawaii Administrative Rules.

(Submit additional copies of this sheet should there be more owners)

  
(Signature of Owner)

Department of Hawaiian Home Lands  
(Address or Interest in Dam or Reservoir)

(Signature of Owner)

(Address or Interest in Dam or Reservoir)

(Signature of Owner)

(Address or Interest in Dam or Reservoir)

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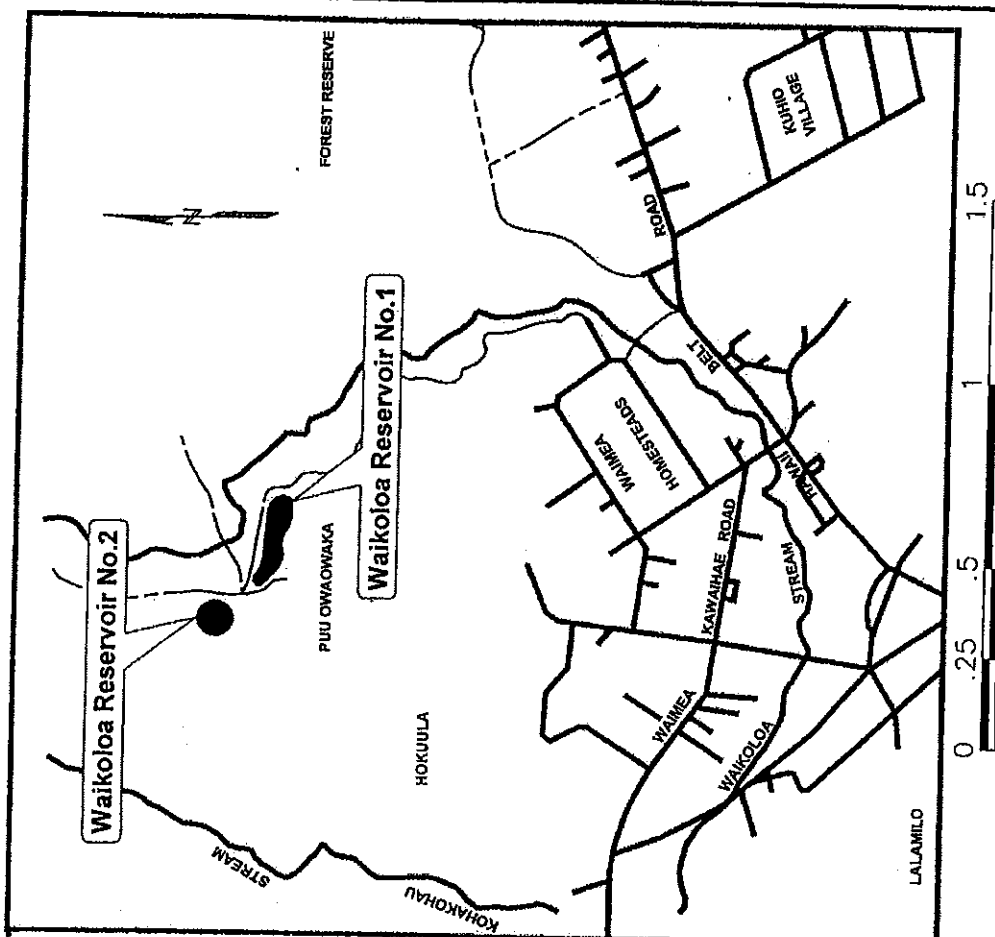
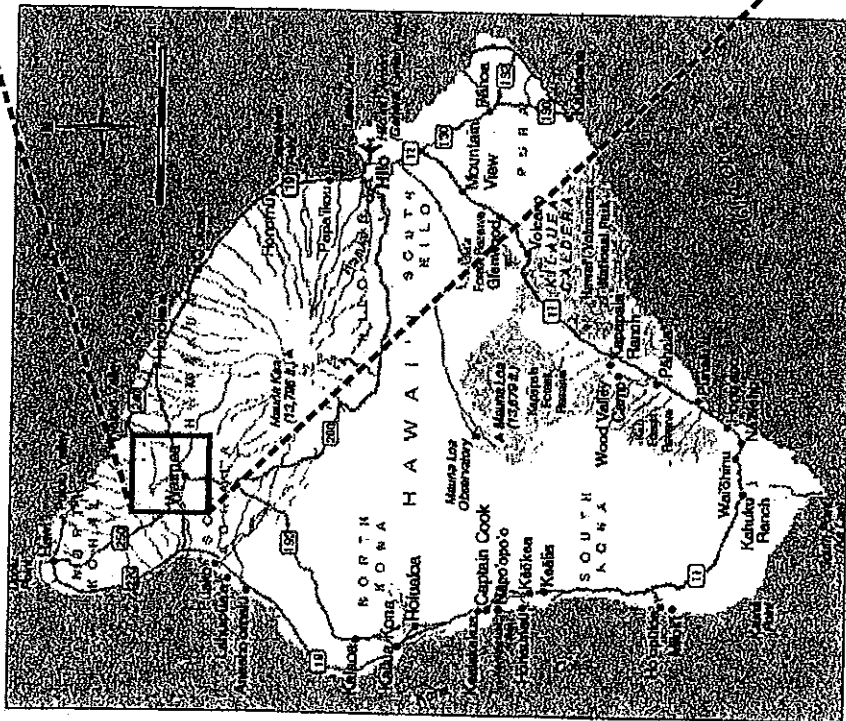
(Signature of Owner)

(Address or Interest in Dam or Reservoir)

I, Milton D. Pavao, the applicant, hereby certify that the information herein is true and factual to the best of my knowledge. Signing below indicates that the applicant understands that, if the permit requested is granted by the Board of Land and Natural Resources, the proposed work is to be completed within two (2) years of the approval date.

  
(Signature of Applicant & Title)

Date: 6/30/08



**KLEINFELDER**  
 611 CORPORATE CIRCLE SUITE C  
 GOLDEN, CO 80401  
 PH. (303) 237-6601 FAX. (303) 237-6602  
 www.kleinfelder.com

**SITE VICINITY MAP**

PLANNING LEVEL DESIGN  
 SUMMARY TECHNICAL MEMORANDUM  
 WAIKOLOA RESERVOIR NO. 2  
 WAIIMEA, COUNTY OF HAWAII

PROJ. NO. 78720 FILE NAME 8720\_01\_0.dwg

DRAWN BY: C.Landon  
 REVISED BY:  
 CHECKED BY: J.Yu  
 FIGURE

**1.1**

FILE CO

SECTION 3

North Home Lands  
225.00 Ac.  
(Richard Smart)  
on Res. Plan No. 8

Waikoloa 50 MG Res. No. 2  
License Encumbered No. 224 (NHL)

Waikoloa 50 MG Res. No. 1  
(No Conveyance)

Waikoloa 50 MG Res. No. 3  
(No Conveyance)

Waikoloa 50 MG Res. No. 4  
(No Conveyance)

Waikoloa 50 MG Res. No. 5  
(No Conveyance)

Waikoloa 50 MG Res. No. 6  
(No Conveyance)

Waikoloa 50 MG Res. No. 7  
(No Conveyance)

Waikoloa 50 MG Res. No. 8  
(No Conveyance)

Waikoloa 50 MG Res. No. 9  
(No Conveyance)

Waikoloa 50 MG Res. No. 10  
(No Conveyance)

Waikoloa 50 MG Res. No. 11  
(No Conveyance)

Waikoloa 50 MG Res. No. 12  
(No Conveyance)

Waikoloa 50 MG Res. No. 13  
(No Conveyance)

Waikoloa 50 MG Res. No. 14  
(No Conveyance)

Waikoloa 50 MG Res. No. 15  
(No Conveyance)

Waikoloa 50 MG Res. No. 16  
(No Conveyance)

Waikoloa 50 MG Res. No. 17  
(No Conveyance)

Waikoloa 50 MG Res. No. 18  
(No Conveyance)

Waikoloa 50 MG Res. No. 19  
(No Conveyance)

Waikoloa 50 MG Res. No. 20  
(No Conveyance)

Waikoloa 50 MG Res. No. 21  
(No Conveyance)

Waikoloa 50 MG Res. No. 22  
(No Conveyance)

Waikoloa 50 MG Res. No. 23  
(No Conveyance)

Waikoloa 50 MG Res. No. 24  
(No Conveyance)

Waikoloa 50 MG Res. No. 25  
(No Conveyance)

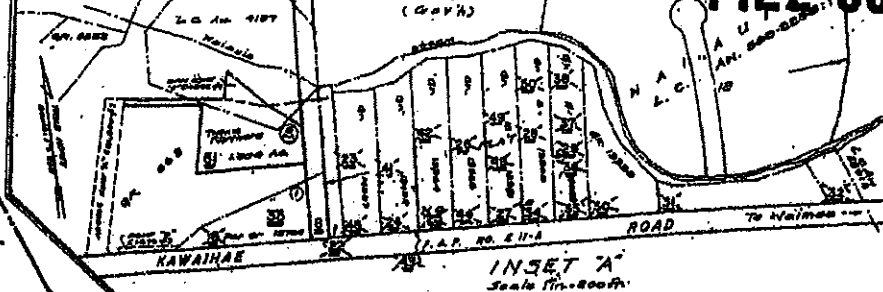
Waikoloa 50 MG Res. No. 26  
(No Conveyance)

Waikoloa 50 MG Res. No. 27  
(No Conveyance)

North Home Lands  
(State of Hawaii)  
SLS 220  
ADDITION TO KAHALA FOR RES.  
(GOV. PROJ. MAY 2, 1938)  
(SLS 220)

State of Hawaii  
RESERVOIR SITE  
1937-38

HALAHA  
(GOV)



INSET A  
Scale 1 in. = 600 ft.

Waimea Water Treatment Plant  
Executive Order No. 2511

SECTION  
PUUKAPU  
6-01

DROPPED PARCELS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 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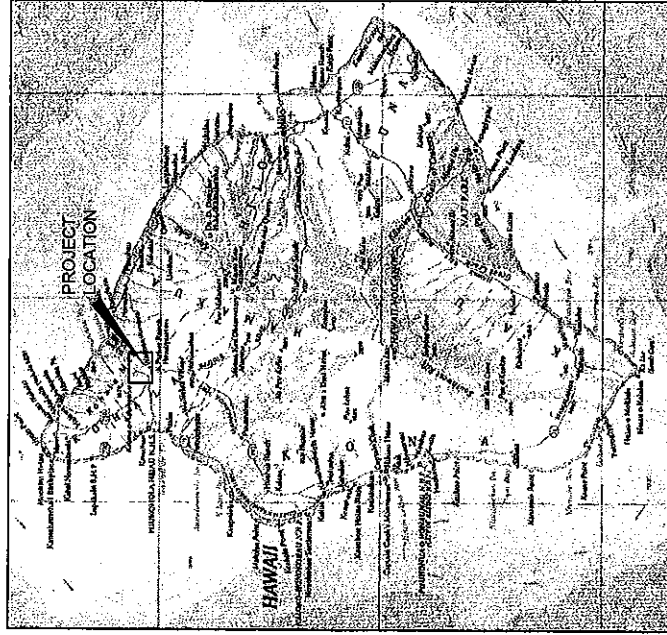


**JOB NO. 2007-043**  
**WAIKOLOA RESERVOIR NO. 2 EARTHQUAKE REPAIRS**  
**County Of Hawaii, Department Of Water Supply**  
**Kamuela, Hawaii**

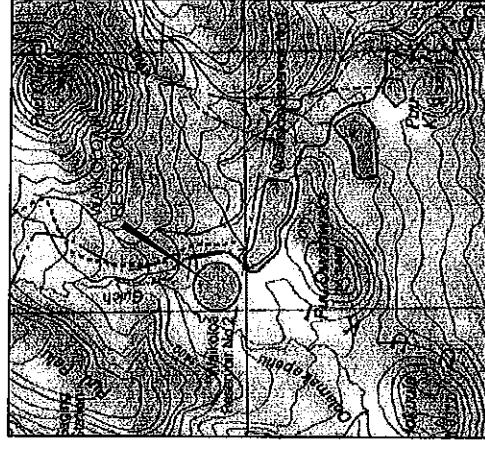
**T.M.K.: 6-5-001, 6-5-047 AND PORTION OF 6-5-011**  
**FEMA-1664-DR-HI**  
**FIPS NO. 001-UVKJ8-00**  
**PW NO. 638**

**LIST OF DRAWINGS**

- |      |  |
|------|--|
| A-01 | COVER SHEET, LOCATION MAP & LIST OF DRAWINGS             |
| A-02 | GENERAL ABBREVIATIONS AND LEGEND                         |
| A-03 | GENERAL CONSTRUCTION NOTES                               |
| A-04 | PLAN OF EXISTING CONDITIONS                              |
| A-05 | GENERAL PLAN OF MODIFICATIONS                            |
| A-06 | PLAN OF BORROW, PROCESSING, STAGING AND WASTE AREAS      |
| A-07 | EXPLORATION PLAN   |
| A-08 | EXPLORATION PROFILE                                      |
| A-09 | SITE RECLAMATION PLAN                                    |
| B-01 | EXCAVATION PLAN AND SECTIONS                             |
| B-02 | EXCAVATION DETAILS                                       |
| B-03 | EXCAVATION SECTIONS AND DETAILS AT EXISTING OUTLET WORKS |
| B-04 | EMBANKMENT SUBDRAINAGE SYSTEM PLAN AND SECTIONS          |
| B-05 | INTERNAL FILTER DRAINAGE SYSTEM SUBDRAINAGE              |
| B-06 | OUTFALL PIPE SECTIONS AND DETAILS                        |
| B-07 | SEEPAGE STABILITY BERM SECTION AND DETAIL                |
| B-08 | SUBDRAINAGE PIPE PROFILE                                 |
| B-09 | INSTRUMENTATION PLAN AND DETAILS                         |
| C-01 | HYPALON LINER INSTALLATION                               |
| C-02 | SPILLWAY STRUCTURES                                      |
| C-03 | HYPALON LINER INSTALLATION SECTIONS AND DETAILS          |



**ISLAND OF HAWAII**  
(NOT TO SCALE)



**PROJECT LOCATION**  
(NOT TO SCALE)

**APPROVED:**

Chairman, Water Board, County of Hawaii

Date

Manager, Department of Water Supply, County of Hawaii

Date

Chief Engineer, Department of Public Works, County of Hawaii

Date

SHEET NO. 4-01  
DRAWING NO. 7822A-A-01

**Preliminary**  
Not For Construction



NOTES:

- 1) SURVEY DATA PROVIDED BY DEPARTMENT OF WATER SUPPLY, COUNTY OF HAWAII, HI, DATED: 9/27/07.  
2) EXPLANATION OF SYMBOLS FOUND ON FIGURE A-02

ENGINEER  
STAMP  
AND  
SIGNATURE

NO.	DATE	DESCRIPTION	BY	CHK	APPRO.
5	1/25	RECEIVED FOR RENT	ASH	98	17700



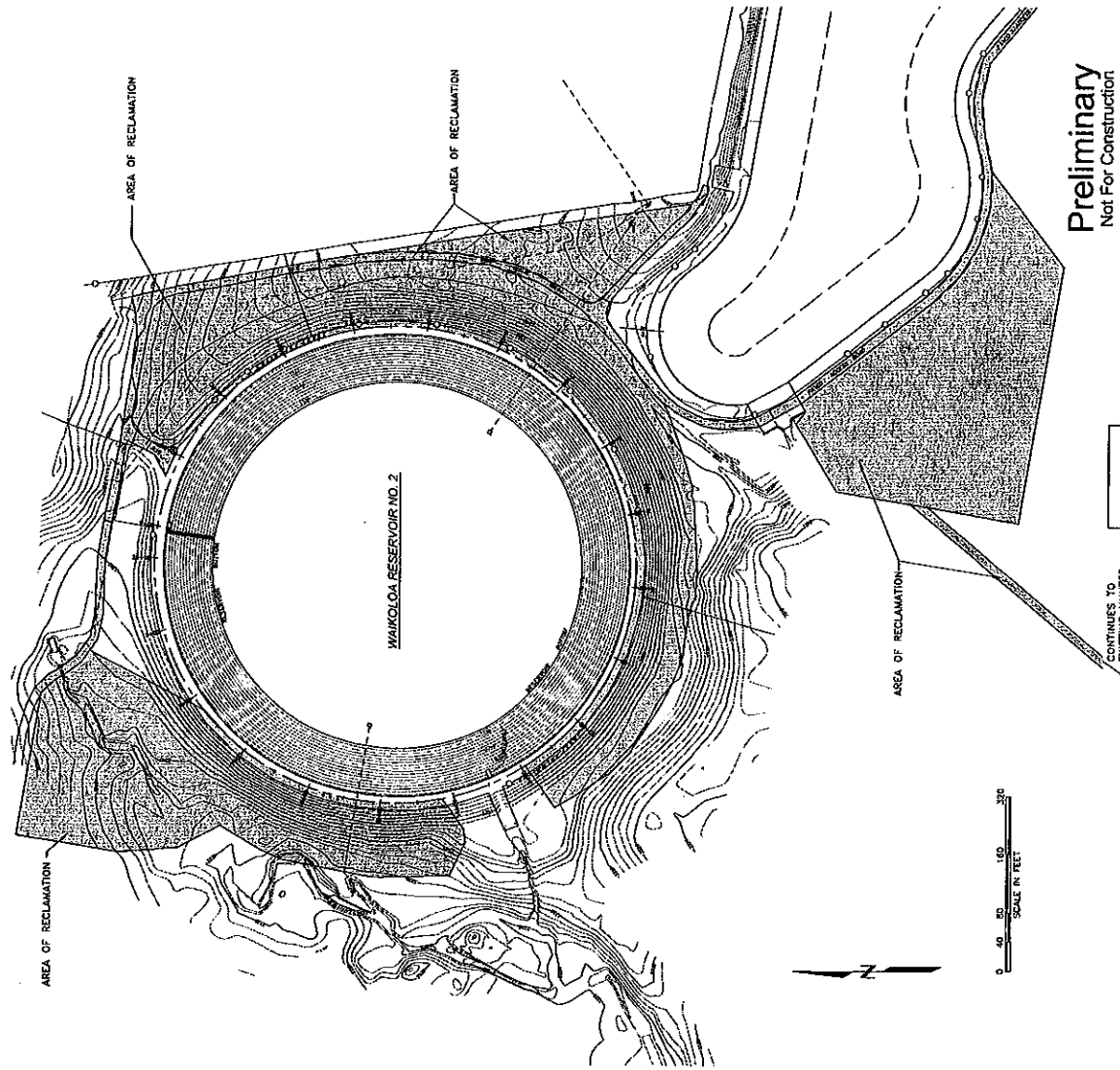
DEPARTMENT OF WATER SUPPLY  
COUNTY OF MARICOPA, ARIZONA  
345 Kehrreuter St., Suite 23  
Phoenix, HI 85120



**GENERAL PLAN OF MODIFICATIONS**

APRIL DECISION OF RECORDS  
 WASHINGTON RESERVATION INC. 2  
 WASHINGTON COUNTY OF INDIANA, VERMONT

DESIGNED BY	REVISION
DRAWN BY	CAL
CHECKED BY	JPM
APPROVED BY	JWGPB
SHEET NO	A-05



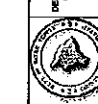
Preliminary  
Not For Construction

ENGINEER  
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AND  
SIGNATURE

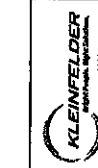
CONTINUES TO  
EXISTING HUNTER  
CHECK GATE

DEPARTMENT OF WATER SUPPLY  
345 KAHANUI ST., SUITE 20  
HONOLULU, HAWAII 96813

NOTES:  
1) SURVEY DATA PROVIDED BY DEPARTMENT OF WATER SUPPLY, COUNTY OF HAWAII, HI.  
2) EXPLANATION OF SYMBOLS FOUND ON FIGURE A-02



DEPARTMENT OF WATER SUPPLY  
345 KAHANUI ST., SUITE 20  
HONOLULU, HAWAII 96813

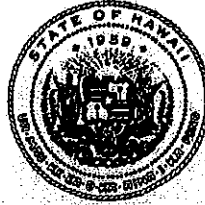


SITE RECLAMATION PLAN  
WAILOA RESERVOIR NO. 2  
HAWAIIAN RESOURCES INC.  
HONOLULU, HAWAII 96813

DATE: 9/27/07  
SHEET NO. A-08  
DRAWING NO. 78729-A-08

**EXHIBIT 4 – TO BE DISTRIBUTED AT THE MEETING**

LINDA LINGLE  
GOVERNOR OF HAWAII



**STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

AUG - 7 2008

Mr. Milton D. Pavao  
County of Hawaii  
Department of Water Supply  
345 Kekuanaoa Street, Suite 20  
Hilo, Hawaii 96720

Dear Mr. Pavao:

**DAM SAFETY CONSTRUCTION/ALTERATION PERMIT NO. 30  
WAIKOLOA RESERVOIR NO. 2 (HI00122)  
RESERVOIR REPAIR, KAMUELA, HAWAII  
PROPOSED PERMIT APPROVAL CONDITIONS**

The Department of Land and Natural Resources (Department) has reviewed your permit application for the above noted project. The Dam Safety program will be recommending that the Board of Land and Natural Resources (BLNR) approve the permit subject to the following special conditions and the attached General Conditions:

1. The owner shall schedule and hold a Pre-construction meeting and notify the Department at least 15 days prior to the meeting.
2. The owner shall prepare and submit a construction schedule in accordance with the General Condition item 4. The owner shall inform the Department prior to reaching critical items with adequate lead time so that the Department may decide to be in attendance to observe specific construction tasks. The Department shall identify milestones of interest, which the owner shall provide notice so that a representative from the Department may be present.
3. The owner's engineer in charge of the construction inspection shall forward a copy of the daily inspection logs, on a weekly basis or as directed by the Department. A copy of any change orders shall be included in this submittal.
4. The owner shall submit a reservoir filling plan prior to the completion of construction. The filling plan shall be approved prior to re-filling of the reservoir.
5. The owner shall schedule a final construction inspection to be conducted prior to refilling of the reservoir. The owner shall inform the Department of the final construction inspection date with adequate time for the Department to plan for attendance at the inspection.

LAURA H. THIELSEN  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI  
FIRST DEPUTY

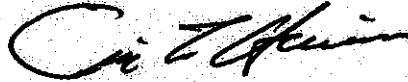
KEN C. KAWAHARA  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

6. The owner shall submit As-built drawings in accordance with the General Condition item 8 within six (6) months of completion of construction.

Please respond by August 8, 2008 if you have any concerns to these conditions. If the conditions are acceptable, we would make recommendation for approval at the next BLNR board meeting. If you have any questions, please feel free to contact Denise Manuel at (808) 587-0246 or Jimmy Leung at (808) 587-0238.

Sincerely,



Eric T. Hirano, PE  
Chief Engineer

Enclosure

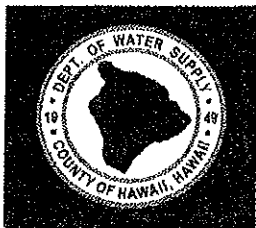
c: Mr. Terry Nago, HDWS  
Mr. Keith Ferguson, Kleinfelder West, Inc.  
(611 Corporate Circle, Suite C, Golden, CO 80401)

## **DAM SAFETY PERMIT GENERAL CONDITIONS**

### **APPROVAL OF PLANS AND SPECIFICATIONS FOR DAM AND RESERVOIR CONSTRUCTION, ENLARGEMENT, REPAIR, ALTERATION OR REMOVAL**

The following General Conditions shall be adhered to for all Dam Safety permits unless otherwise authorized in writing.

1. Construction work shall commence within five years of the date of the approved application.
2. A licensed engineer in the State of Hawaii shall be in charge of the inspection of the construction.
3. One set of final plans and specifications with the County approval (signature) shall be submitted to the Department prior to the start of the work.
4. The Department shall be notified five (5) calendar days prior to the commencement of the construction, and a construction schedule shall be provided, which includes the notice to proceed date and estimated project duration.
5. Changes and/or modifications to the plans shall be sent to the Engineering Division in the form of shop drawings and/or plans that are approved and stamped by a licensed engineer.
6. An emergency action plan shall be prepared for the reservoir. The plan shall address personnel responses should an emergency situation arise during the construction.
7. The Department shall be notified fifteen (15) calendar days in advance to the final construction inspection.
8. Upon completion of the work, written notification shall be given to the Department, signed by the owner's engineer supervising the construction. The notification shall certify that the project was constructed in conformance with the approved plans and specifications and shall be accompanied by supplementary drawings and/or descriptive matter describing the dam as actually constructed (as-built drawings). The As-built drawing/plans shall be stamped by the licensed engineer monitoring the construction work.
9. The applicant/owner shall submit one copy each of the Operations Manual and the Emergency Action Plan for the facility upon completion of the project as applicable.
10. For dams and reservoirs that have been drained or for new construction, the applicant/owner shall inform the Department at least fifteen (15) calendar days in advance before filling the reservoir. The applicant/owner shall follow a filling plan and provide documentation of monitoring during the filling operation.
11. The applicant/owner shall utilize appropriate erosion control best management practice measures during construction to minimize turbidity (such as scheduling of work during periods of low stream flow) and prevent debris and construction materials, including cement, petroleum products, and other pollutants from enter the waters of the State. Construction related water and debris should be properly disposed of in a legal and environmentally safe manner.
12. The applicant/owner shall comply with all applicable Federal, State, and County regulations.



**DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII**

345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAII 96720  
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

August 8, 2008

Mr. Eric T. Hirano, Chief Engineer  
State of Hawai'i  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, HI 96809

**DWS JOB NO. 2007-043**  
**WAIKOLOA RESERVOIR NO. 2 EARTHQUAKE REPAIRS**  
**SOUTH KOHALA, HAWAII**  
**TAX MAP KEY 6-5-001, 6-5-047, AND PORTION OF 6-5-011**

REF: DAM SAFETY CONSTRUCTION/ALTERATION PERMIT NO. 30  
WAIKOLOA RESERVOIR NO. 2 (HI00122)  
RESERVOIR REPAIR, KAMUELA, HAWAII  
PROPOSED PERMIT APPROVAL CONDITIONS

The County of Hawai'i, Department of Water Supply (DWS), acknowledges receipt of your above-referenced letter, dated August 7, 2008, and accepts to comply with the general and special conditions mentioned therein. DWS anticipates this project to commence construction in December 2008, and we appreciate the collective efforts made by your Department to get the request for permit approval on the next Board of Land and Natural Resources meeting agenda.

It is our normal practice to hold a pre-construction meeting with the contractor, our consultants, and other interested project stakeholders shortly before the contractor's notice to proceed date. We will inform you at least five (5) days prior to the scheduled date of the pre-construction meeting as stipulated in your special conditions. The other conditions will be coordinated within our Department as well as with our project consultant, Kleinfelder West, Inc., and our consultant currently preparing an updated Emergency Action Plan, Ernest K. Hirata & Associates, Inc., together with your department.

If you have any questions or require any additional information, please contact Mr. Terrance Nago of our Engineering Division at 961-8070, extension 250.

Sincerely yours,

Milton D. Pavao, P.E.  
Manager

TIN:dms

*... Water brings progress...*

Exhibit 6